The Internet and locus of control in older adults

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Abstract

Objective: To investigate how training older adults to find medical information using the Internet affects their locus of control.

Methods: Quantitative methods were utilized. Specifically, the Multidimensional Health Locus of Control survey was distributed at the onset of each seminar and again at the conclusion.

Results: Paired t-tests revealed that the subjects did not change their locus of control regarding their health beliefs over the period of the seminar. However, there was statistical significance with regard to eight specific questions.

Conclusion: Subjects scored high on their level of internal locus of control coming into the study. The majority of subjects had already learned to use the computer, owned a home computer, and had access to the Internet, but had not used the Internet to search for healthcare information. The challenge continues to be reaching those older adults who have not encountered the computer and the Internet.

Introduction

The Internet has enabled patients to take a more active role in the health care process[1]. While the Internet has contributed to societal change, and provided opportunities to revolutionize health care[2, 3], it may be said that for the older adult population, it is more of an 'evolution' than 'revolution'. In a recent survey by the University of Pittsburgh [4], it was discovered that 62% of the residents of Pittsburgh and surrounding Allegheny County had access to the Internet. However, the average older adult in Allegheny County, the second largest population of older adults in the nation [5], had the lowest levels of computer ownership and more limited access to the Internet than other county residents. Furthermore, these elderly adults, who make up 17.8% (228,416) of the county's 1,281,666 residents lacked the essential knowledge of how to use the Internet to locate health information.

Nationally, research[6] shows that older Americans are in danger of being cut off from one of the most provocative communication mediums of the 21st century. In the United States, older adults make up 13% of the population with only 4% using the Internet. Overall, 56% of America is online and out of that percentage, only 15% age 65 and over have direct access to the Internet[7] Thus, this study explored the impact the Internet had on older adults with regard to their beliefs of their own control over their health care. Does training older adults to use the Internet for health information affect patterns of locus of control?

The Multidimensional Health Locus of Control (MHLC) Scales was originally a unidimensional instrument, which was developed to determine whether health related factors were determined by personal actions or the actions of significant others. With the creation of the MHLC, researchers could measure whether an individual believed their health was controlled by themselves, by chance, or by significant others[8]. The locus of control construct was first derived from Rotter's social learning theory [9, 10], which stated that behavior is a *function* of the expectancy that a specific action will lead to a specific goal or outcome, combined with the reinforcement value of that goal or outcome [11]. This study explored whether education, via the Internet, had an effect on the older adult's locus of control.

Method

To facilitate the training of senior citizens, a large suburban Pittsburgh Public Library and two community senior centers agreed to sponsor a series of Internet training seminars and make their resources available to the research team. These resources included a meeting room and use of Internet accessible computers. The decision to use a library and the senior centers as the setting for the training was made due to the accessibility of the Internet for the elderly.[4] The training sessions were advertised in two

local newspapers and a local suburban magazine. Flyers were also sent out to local area residents. The sessions were five weeks in length, meeting once a week for two hours. Each session began with an overview of the day's topic, followed by hands-on instruction and practice. The sessions used constructivist teaching techniques and self-directed learning. Small group size made individual attention possible for the hands-on portion of each session. Handouts were provided to the participants to serve as a reference for future use.

Subjects

A total of 50 subjects, 40 female, 10 male, age 55 and older, self volunteered to be part of the study.

Settings

A large suburban Pittsburgh Public Library and two community senior centers.

Instrument

The survey, MHLC was used, measuring the three constructs, internal locus of control, powerful others, and chance. The survey was developed by Wallston and Wallston in 1978 [8, 12] and was chosen for this study because the intervention was aimed at encouraging the subjects to change their beliefs about their ability to control their own health outcomes by educating them on how they could use the Internet to research their health conditions. The MHLC was also chosen because it has been shown to have good criterion validity, concurrent validity, and reliability [13]. Six items measure the extent that an individual believes that he/she has control over their own health status (internal). Six items measure whether an individual believes that their healthcare is left in the control of health professionals (powerful others), and six items measure the extent to which the subject believes that their health status is left to 'chance'. Each item is measured on a six point likert scale of agreement with one representing 'strongly disagree' and six representing 'strongly agree'.

Results

Descriptive statistics:

An overwhelming number of the subjects were women (81%), had used the computer before (91%), have a home computer (74%), and have used the computer to look up information on the Internet (50%). However, only 40% had looked up health-related information on the Internet prior to the seminar. After the seminar, subjects were asked how many times they had looked up health information on the Internet outside of the seminar, of which approximately 64% (63.8%) reported 'yes'.

Inferential Statistics:

Overall, paired t-tests on the subscale scores did not result in a statistically significant difference. Internal Locus of Control (p=.344), Powerful Others (p=.324), and Chance (p=.351). A mean score of 21 reflects neutrality; therefore the subjects' scores reflected a tendency toward having an internal locus of control [Table 1], which remained consistent throughout the seminar.

Table 1: Locus of Control

Locus of Control Survey		# items	Mean	sd
Internal				
	Form A	6	24.05	4.42
	Form B	6	24.31	3.47
Powerful Others				
	Form A	6	20.02	4.89
	Form B	6	20.48	4.57
Chance				
	Form A	6	17.12	5.65
	Form B	6	16.38	4.82

Pre and Post tests were conducted on the individual questions on the survey. Eight questions revealed statistical significance [Table 2]. Regarding the 'powerful others' construct, paired t-tests revealed statistical significance for three questions. For example, prior to the seminar, subjects disagreed that health professionals could control their health (M=2.90). After the seminar, they attributed more power to the health professional to the degree that they were more neutral to slightly agreeing that health professionals have the ability to keep them healthy (M=3.62).

Paired t-tests on the 'Internal' construct revealed statistical significance for two questions. Before the seminar, subjects slightly agreed that they had control over their health (M=4.54). This feeling intensified after taking the class (M=5.02). However, subjects were neutral with regard to the belief that if they took care of themselves they could avoid illness (M=3.84) prior to the seminar, and upon completion, that belief took on a more negative tone (M=3.39).

Paired t-tests on the 'Chance' construct revealed statistical significance for three questions. Each question focused on a specific aspect involved with the chance that one could become sick. Those aspects were the 'likelihood

of becoming sick', 'sickness as a matter of fate', and 'luck'. On the first aspect of 'likelihood', the trend moves away from slight disagreement (M=2.74) to a more neutral belief between slight disagreement and slight agreement (M=3.57). In terms of 'fate', the trend moves away from being more neutral (M=3.31) to one of more disagreement (M=2.62). Finally, in regards to luck, subjects' responses reflected beliefs that moved from fairly neutral feelings (M=3.24) to one of slight disagreement (M=2.67).

Table 2: Paired t-tests

Form A	Form B	2-tailed Paired t-test sig.	Form A Mean	Form B Mean	Correlation coefficient	Construct
Whenever I don't feel well, I should consult a medically trained professional.	I can only maintain my health by consulting health professionals.	.000**	3.97	2.66	.194 (.145)	Powerful others
Health professionals control my health.	Health professionals keep me healthy	.000**	2.90	3.62	.465 (.000**)	Powerful others
Regarding my health, I can only do what my doctor tells me.	Following doctor's orders to the letter is the best way for me to stay healthy.	.000**	2.69	3.76	.537 (.000**)	Powerful others
The main thing which affects my health is what I myself do.	My physical well-being depends on how well I take care of myself.	.004*	4.54	5.02	.347 (.008**)	Internal
If I take care of myself, I can avoid illness.	When I feel ill, I know it is because I have not been taking care of myself properly.	.006	3.84	3.39	.490 (.000**)	Internal
No matter what I do, I'm likely to get sick.	Even when I take care of myself, it is easy to get sick.	.000**	2.74	3.57	.406 (.002*)	Chance
If it's meant to be, I will stay healthy.	When I become ill, it's a matter of fate.	.000**	3.31	2.62	.438 (.001**)	Chance
My good health is largely a matter of good fortune.	When I stay healthy, I'm just plain lucky.	.005*	3.24	2.67	.421 (.001**)	Chance

* represents significance at the .005 level
**represents significance at the .001 level

Conclusion

The results of this study revealed three significant conclusions. First, the subjects who volunteered for the seminars were not representative of the overall older adult population. Subjects exhibited feelings of internality in terms of perceived control over their health at the onset of the seminar. Therefore, these subjects, who are more internal to begin with and have had some experience using the Internet, are more likely to be willing to learn to use the Internet to help find information pertaining to their health. Past research shows that older adults tend to have an external locus of control towards their health [14], therefore, it was surprising to discover that an overwhelming majority of the subjects had an internal locus of control. In subsequent studies, care needs to be taken to insure that subjects are representative of the population.

The second conclusion is that subjects who have an internal sense of locus of control still recognize the significant role that health professionals may play in the control of their healthcare. For example, subjects may feel that if they can provide their health care provider with

additional information on treatment or medication, it is still up to the provider to write the prescription or place the order for the treatment.

The last conclusion drawn from this study reflects the power of 'chance', even in subjects who perceive they have an internal locus of control over their health. Subjects displayed slight agreement on the aspect that there is a likelihood they could become sick. One can be very vigilant in terms of preventive care and still get sick. Germs can be spread from person to person or through the air. During the presentation of these seminars, the anthrax scare was in the media. It was during this time that an elderly woman from Connecticut died of anthrax, yet she rarely left her home. It could be that greater access to information has led the subjects to see how chance happenings can also affect their health.

Discussion

Recent research[7] shows that as older adults go online, a majority (53%) of them will use the Internet to locate health related information. Subjects in this study were most interested in sites that provided information on their illnesses and how they should be treated, the medications they were taking, and information about their physicians, i.e., whether they were board certified and where they received their education. As older adults continue to use the Internet, it is highly probable they will use this information to take a more active role in their health care. This study showed that after being exposed to health care information on the Internet, 64% of the subjects used the Internet outside of the seminar to locate medically related information. The Pew Internet & Life[1] project reported that seven million people search the Internet each day to locate health related information. This information helps individuals understand their illnesses, verify diagnoses, investigate treatment options, check physicians' credentials and learn more about current medications. Whether it leads those who have an external locus of control to a more internal one will need further investigation. Moreover, it would be interesting to investigate whether a correlation exits between computer use and perception of health locus of control. Future studies should also take into consideration how to get more men and those who have never used a computer to look up health information on the Internet. Studies have shown that patients who ask questions, elicit treatment options, express opinions, and state their preferences regarding treatment during office visits with their physicians have measurably better health outcomes than those who do not communicate [15]. Therefore, engaging these individuals could impact their health outcomes. Finally, future research needs to measure the effectiveness of internal locus of control and using the Internet to look up health information has on health outcomes.

As more and more older adults go online to find medical information, web sites need to be designed to take into consideration the manner in which the elderly process web based information. From the research teams interaction with the participants in the study, one key observation was made. Older adults can be described in terms of McLuhan's [16] typographical/acoustical dichotomy. Individuals who possess a typographical mind, read material from left to right, from the beginning to the middle to the end in a top to bottom fashion. While those individuals with an acoustical mind can deal with information simultaneously in a 360 degree surround, much like someone raised in an oral society. Therefore, older adults, who grew up reading books, try to read web pages as they would a page in a book. However, the web is acoustical, in the sense that a web pages is not processed in the traditional left to right, top to bottom fashion. Upon opening a page, the end user can be inundated with links to other pages, audio and video clips, and even other windows that open without prompting. This can be very unsettling to older adults who have not experience with the medium.

Those possessing an acoustical mindset are more likely to be individuals who grew up with television or the Internet itself. [17] Because they tend to process the screen, be it a television or computer monitor, all at once. They also learn to focus immediately on the area of the screen that will contain the information that they need. This skill allows them to process web based information more efficiently and quickly. To accommodate the heterogeneous nature of the web's user population, in terms of the typographic and acoustical dichotomy, web site developers must consider universal design. Universal design develops artifacts that can be used by all people, without the need for adaptation and special design. [18]

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